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MARTIN MARIETTA ENERGY SYSTEMS, INC.

300503  
POST OFFICE BOX Y  
OAK RIDGE, TENNESSEE 37831

July 24, 1987

Mr. R. J. Spence  
Department of Energy, Oak Ridge Operations  
Post Office Box E  
Oak Ridge, Tennessee 37831

Dear Mr. Spence:

Department of Energy (DOE) - Headquarters Environmental Survey:  
Comments on Findings

As requested, comments on each of the findings identified during the DOE Headquarters Environmental Survey are enclosed. A preliminary report, the first step in the post-survey formal reporting chain, has not yet been released by DOE Headquarters. These comments are intended to provide useful status information for your meeting with the Tennessee Department of Health and Environment.

If you have any questions, please contact S. Marcus at 6-8120.

Very truly yours,



Gordon G. Fee  
Vice President and  
Y-12 Plant Manager

GGF:SMarcus:lap

Enclosure: As Stated

cc/enc: J. K. Bailey  
P. L. Goddard, DOE-ORO  
H. W. Hibbitts, DOE-ORO (2)  
C. C. Hill/L. O. Vaughan  
D. W. Lane  
L. W. Long  
S. Marcus - NoRC  
L. L. McCauley/C. W. Kimbrough  
L. J. Mezga  
M. E. Mitchell  
T. S. Tison, DOE-ORO  
D. Underwood, DOE-ORO  
H. D. Whitehead, Jr.

cc: G. G. Fee  
M. L. Jones/T. R. Butz  
L. F. Willis

#525

ENCLOSURE

Letter, Fee to Spence

July 24, 1987

Letter Title: Department of Energy (DOE) - Headquarters  
Environmental Survey: Comments on Findings

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Comments on Findings"

Authors: G. G. Fee

Abstract: Comments on each of the findings indentified during the DOE  
Headquarter Environmental Survey, including discharges to EFPC and  
McCoy Branch, improperly disposed of materials, leaching to  
groundwater, etc.

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COMMENTS ON DOE HEADQUARTERS  
ENVIRONMENTAL SURVEY FINDINGS

CATEGORY II

Finding

1. The Oil and Solvent Drum Storage Area within the northern section of the Salvage Yard (south of Building 9114) contains several leaking drums of oil and RCRA listed solvents. Some of the drums' contents are also known to be contaminated with low levels of depleted uranium. The soil and standing water in the immediate area are discolored, and other drums in this storage area appear to be in a serious state of deterioration. Weekly inspection logs for the area confirm the presence of leaking drums over several consecutive entries. This situation represents a related and more immediate aspect of a larger (storage) problem included in Category III.

Comment

A documented program for identifying and replacing deteriorating and leaking drums has been in place at the Y-12 Oil and Solvent Drum Yard since 1984. This procedure involves weekly inspections of the drum yard with written, follow-up actions to be taken to correct deficiencies. This procedure has been revised to ensure that leaking drums are replaced within 24 hours. Drums not yet leaking, but found to be in a deteriorated condition, shall be replaced within five working days. As a result of regular inspections over the last two years, approximately 750 drums of solvents and oils have been repackaged.

Drums arriving at the Salvage Yard are inventoried and sampled to determine the appropriate disposal option. Based on analytical results, drums are marked and segregated for pumping into bulk tanks. The Y-12 Plant has historically generated 1200-1500 drums of oil on an annual basis. In addition, oils generated at the Oak Ridge Gaseous Diffusion Plant (ORGDP) were transported and stored at the Y-12 Plant prior to 1980. Solvent storage at the Salvage Yard was initiated in 1981.

The Salvage Yard has been used for oil drum storage since 1974. The Y-12 Plant has used oil landfarming and local waste oil recycle vendors as disposal outlets for uranium-contaminated and clean oils, respectively. In 1981, the landfarming option was closed creating a backlog of uranium and beryllium contaminated oils at the Salvage Yard. The TSCA incinerator at ORGDP should begin receiving wastes by the second quarter of FY 1988. Until that time, the plant must continue to store contaminated waste oils and solvents in drums and bulk tank storage. A total of 80,000 gallons of tank storage capacity has been added since 1981 to assist in the removal of drummed oils and solvents from the Salvage Yard. A total of 226,000 gallons of new tank capacity will be available by the end of FY 1987. Current disposal options for clean

waste oils and solvents include commercial incineration and recycle. Both options are being pursued by the plant. However, commercial release of these materials requires extensive sampling, verification, and approval prior to release resulting in delays and further increases in waste oil and solvent inventories.

Partial closure of the facility (western diked area) in 1986 resulted in the removal of 2,130 drums of oils and solvents from the yard through sampling, bulk storage, and commercial disposal. The TDHE accepted the closure of the west diked area. In addition, as part of the Perimeter Intrusion Detection Assessment System (PIDAS) project, the oil stained gravel and soil have been removed. The east diked area will remain in operation until new replacement facilities expected in the 1988/1989 time frame are constructed. At that time, all hazardous waste will be removed and closure of the east diked area will be conducted in accordance with a TDHE-approved closure plan.

#### Finding

2. A potential mixed waste is being treated and disposed of without required RCRA notification and approvals. Contaminated depleted uranium chips is a suspected mixed waste being handled at the site as a low-level waste. The chips are contaminated with very small amounts of an aqueous coolant known as "Trim-sol." While this coolant is not a listed waste, minute quantities of listed solvents (F002 & F005) are known to end up mixed in with the coolant. The facilities that handle the chips are intended to only manage low-level waste. Therefore, these facilities are not currently permitted, neither do they have interim status under RCRA, and are operated without controls, monitoring, and operating practices normally associated with RCRA facilities to prevent the release of hazardous constituents into the environment. The facilities in question include the uranium chip pits/trenches at the Bear Creek Valley Waste Disposal Area and the Uranium Chip Oxidizer (incinerator). In addition, the uranium chips mixed waste has not been included in the annual hazardous waste generation summary report submitted to the state. (Note: Plant personnel have indicated that the state has been notified that uranium chips containing "Trim-sol" coolant are being disposed of at Bear Creek, however, the state is not aware that the coolant may be contaminated with listed solvents.)

#### Comment

Depleted uranium chips have and are being sent to the Bear Creek Burial Ground (BCBG) for disposal. The depleted uranium is machined using a coolant consisting of 4 percent Trim-sol (a biodegradable oil) and 96 percent water. After machining, waste metal chips are drained and collected in 55-gallon drums containing water. The filled drums are moved from the shipping area to the dock and transferred into a metal dumpster containing water for storage (up to 24 hours) prior to

transport to BCBG for disposal. The burial ground is not used for the disposal of the coolant used to machine the metal. The state is aware of the above procedure.

Trace quantities of Trim-sol may adhere to the surface of the chips being disposed. Incidental amounts of degreasing solvents may reach the coolant since freon is applied to chem wipes or via use in a squirt bottle for spot cleaning the parts being machined in some of the shops. Based upon opinions rendered by the TDHE in a September 1984 meeting between the TDHE, EPA Region IV, the DOE and Martin Marietta Energy Systems, Inc., it was understood that while coolants mixed with large amounts of halogenated degreasing solvents are considered to be hazardous, mopwaters containing trace amounts of degreasing solvent from incidental drippings are not hazardous.

The circumstances presented by the disposal of the depleted uranium chips appeared to be comparable to those of the mopwater scenario. As a result, the disposal of the chips was not considered to be a RCRA activity. Since it was believed that the disposal of the chips was covered by the Atomic Energy Act by-product exemption, the applicability of the RCRA was not considered to be of legal consequence, therefore, little was done to substantiate the determination.

In response to this finding and the revision to the by-product rule, this issue has been revisited. In a recent discussion with the TDHE, the determination that the chips do not constitute a hazardous waste was reinforced. Therefore, the corrective actions stated in the finding (i.e., the permitting of chip handling facilities) are not required.

### Finding

3. A backflow preventer at Building 9201-3 was found unsatisfactory on every six-month inspection since June 1981. Delay in repairing defective backflow preventers could allow potentially hazardous process waters to contaminate the potable water system.

### Comment

The backflow preventer noted in this finding was repaired shortly after the deficiency was identified. In addition, a procedure has been implemented which categorizes necessary repairs on backflow preventers as a "safety action," automatically giving high priority to their maintenance.

## CATEGORY III

Finding

4. Mercury-contaminated groundwater within the plant site is entering the surface water of East Fork Poplar Creek (EFPC) through outfalls which are not currently monitored. Additionally, there is a potential for uranium, nitrates, solvents, copper, iron, and sulfate contaminants onsite to be transported to the surface water through the groundwater. Polychlorinated biphenyl (PCB) contamination onsite also may be entering the groundwater, but transport into EFPC is more likely through surface runoff.

Comment

The evidence for mercury contamination of groundwater at the Y-12 Plant is minimal. As noted by Rothschild et al. (ORNL/TM-9029), some high concentrations of mercury do occur in soil and fill at several areas within the plant; but mercury analyses of groundwater in that area indicate that mercury does not appear to be moving in significant quantities in an aqueous phase. The highest soluble concentrations found (about 1 ug/L) were limited to three wells. The occurrence of elevated mercury levels, mainly in shallow soils and fill (less than 10 feet), and the background concentrations of mercury observed in most of the wells indicates that the metal has been generally immobilized/retained in upper earth materials. It is true that groundwater which enters the subsurface storm drainage system via sumps and pipe infiltration can become contaminated with mercury before reaching EFPC. The presence of metallic mercury and mercury-contaminated sediment in many storm drains, in concert with chlorinated raw water (once-through cooling water), can lead to significant export of both soluble and particulate mercury to EFPC. Efforts underway to alleviate this situation include the cleaning and relining of pipes and the rerouting of water flow. These activities are part of the Reduction of Mercury in Plant Effluents Line Item project.

The subsurface storm drains from springs and groundwater seeps in Buildings 9201-1, -2, -3, and -4 are permitted on the Y-12 NPDES permit as Category I and II discharges. Due to the ubiquitous nature of groundwater entering the surface stream, the TDHE/EPA agreed to instream monitoring for mercury rather than compliance monitoring at each of these outfalls. Mercury is monitored at the New Hope Pond inlet and outlet.

With respect to uranium, nitrate, and heavy metal contamination: It is known that the plume of the S-3 Ponds extends toward the southeast and contains uranium, nitrate, and heavy metals. Use of the S-3 Ponds as a disposal site was discontinued in March 1984. The potential exists for these materials to enter the surface water through springs and also infiltration into storm sewers. The extent and movement of the plume of the S-3 Ponds and plumes potentially generated by other sites is addressed by the Comprehensive Groundwater Study Plan for the Y-12 area

which is currently being prepared by a subcontractor. The plan is expected to be complete in September 1987.

With respect to PCB contamination: The Y-12 Plant recognizes the possibility of PCB contamination in groundwater; however, sample results do not support this. As acknowledged by the survey team, the potential for the transport of PCBs is more likely via surface runoff to EFPC. Monitoring programs being implemented include state-of-the-art biological monitoring techniques, conventional water quality monitoring, and a PCB monitoring plan developed in accordance with the Y-12 Plant NPDES permit. Existing sample results indicate a downward trend in PCB concentration with increasing distance downstream of New Hope Pond. Soil sampling is also scheduled for sites associated with the Z-oil system to identify possible PCB-contaminated areas. Until this sampling effort is complete, it cannot be determined whether or not the Z-oil system is a source of PCB contamination to EFPC.

In addition to the sampling programs in place, preventive actions are being taken to eliminate potential sources of PCB contamination. Such actions include the closure of several storage areas under RCRA where there have been historical releases of PCBs and the evaluation of other sites for cleanup under the 3004(u) program. The removal of Askarel transformers and the retrofilling of PCB mineral oil transformers are also in progress.

Added note (general scope): The Area Source Pollution Assessment and Control Plan for EFPC is currently evaluating some of the issues raised by this finding. This study is using the assistance of an engineering contractor, and its objective is to evaluate nonpoint source discharges to EFPC. Nonpoint source discharges include surface water runoff and groundwater infiltration which discharge into EFPC. The program is looking at all pollutants which may be entering EFPC as a result of nonpoint pollution sources. Pollutants being evaluated include all the nutrients such as nitrates, phosphates, and ammonia; heavy metals such as copper, zinc, mercury, uranium, iron, and cadmium; and the priority pollutant organic fractions such as volatiles, acid/base neutrals, and PCBs. Since other programs are more thoroughly evaluating mercury contamination, mercury is of secondary importance to this program. Preliminary sampling and surface water modeling has already been conducted, and full-scale implementation is scheduled for the summer of 1987 and will likely continue through the spring of 1988.

#### Finding

5. Untreated process water discharges to EFPC are causing elevated metal concentrations, oil, grease, and other organic contamination and high/low pHs. This problem was recognized in an MOU signed in 1983.

#### Comment

Approximately 160 discharges to EFPC have been eliminated or permitted since May 1983. A Federal Facility Compliance Agreement has been



developed for the Y-12 Plant in conjunction with the NPDES permit. This agreement established compliance schedules for planned wastewater treatment facilities and mandates the collection followed by treatment prior to discharge of selected waste streams. To date 10 of the 12 collection and treatment facilities have been completed. With the exception of the discharges associated with the Steam Plant Wastewater Treatment Facility (scheduled to attain compliance with the NPDES permit in March 1988), all discharges have been eliminated as required. The Federal Facility Compliance Agreement also establishes a compliance schedule for the Biology Wastewater Treatment Facility.

#### Finding

6. Past, and to a lesser extent current, wastewater disposal practices along with the accidental loss/spillage of process materials have contaminated the floodplain of EFPC. The Oak Ridge Interagency Task Force is studying the extent of mercury, other heavy metal, radionuclide and organic contamination in the soils, and sediments of EFPC and the potential effects on the groundwater.

#### Comment

Preliminary results by the Interagency Task Force indicate that ingestion of contaminated soil, the major pathway of concern, is not likely to result in adverse health effects to the public. Therefore, the extent of the contamination and subsequent removal actions can best be evaluated in a careful, systematic manner. While the Interagency Task Force will continue to evaluate the results of the study, the primary responsibility for this effort has been determined by the EPA to be pursuant to the RCRA 3004(u) permit.

One action taken to reduce offsite contamination is the removal of mercury contaminated soil from the Oak Ridge Civic Center area. To date, approximately 4200 cubic yards of soil have been removed.

#### Finding

7. Radionuclides, VOCs, heavy metals, nitrates, and PCBs have contaminated soils and groundwater at the Bear Creek Valley Waste Disposal Area and have caused degradation of the surface waters and sediments of Bear Creek.

#### Comment

The Disposal Area Remedial Action (DARA) is a funded subproject of the Environmental Improvements Line Item project aimed at the mitigation of the contaminants stated associated with Bear Creek Valley. It should be noted that PCBs have not been detected in the groundwater wells although some migration of PCBs in Bear Creek Valley has been observed around the oil retention ponds and oil landfarm via soil sampling. DARA will provide for the closure of the two Oil Retention Ponds and capping for part of the burial grounds. Closure plans are being

developed for other waste management units in the Bear Creek watershed. Investigations have been underway to evaluate the extent of the contamination and future remediation requirements. There have been major revisions to disposal practices at the Bear Creek Burial Grounds which include greater awareness of waste characterization, careful screening for suspected contaminants by lab analysis and other techniques, and segregation of waste streams based upon acceptance criteria at Y-12 facilities.

#### Finding

8. Indications of organic and nitrate contamination exist in soils and select groundwater monitoring locations south of the plant from disposal sites in the Chestnut Ridge area.

#### Comment

Five networks of groundwater wells used to demonstrate compliance with RCRA regulations and for the purposes of characterization have been established in the Chestnut Ridge area. Data from four quarters have shown indications of organics in the groundwater at one site, the Chestnut Ridge Security Pits. However, the wells are new, the levels are less than 1 mg/L, and the levels have decreased during the one calendar year for which data has been collected. The site continues to be monitored, and a closure plan has been submitted for the Chestnut Ridge Security Pits. Nitrates found in the groundwater are below drinking water standards.

#### Finding

9. Twenty-nine waste disposal (inactive), leak, and spill sites are known or suspected of being sources of environmental contamination. Twenty-one of these sites have been identified through Phase I Installation Assessment for Y-12. Studies to assess the nature and extent of environmental contamination are underway for the major sites and are starting at some of the smaller sites. An additional eight sites have been identified since the Phase I draft report was prepared. These include the radioactive, possibly thorium, contaminated site south of Alpha 5 (Building 9201-5), identified through the recently completed ORNL Radiological Survey; radioactive, possibly uranium, contamination at Building 9728, site of a former laundry operation; elevated radiation levels at a site located north of Portal 18 and east of the S-3 Ponds that was possibly used as an unauthorized soil spoils dumping area; Rogers and Kerr Hollow Quarries where a wide range of materials, including hazardous wastes, have been disposed of in the past; Cesium 137 and possibly Strontium 90 contamination along the CSX railroad tracks east of the plant, which is being monitored by DOE through ORNL and ORAU; a potential site east of the Chestnut Ridge security pits identified through a 1950 aerial photograph of the area; and finally, offsite contamination in the floodplain of East Fork Poplar Creek which is also being monitored and studied by DOE through the Oak Ridge Interagency Task Force. Additional sites of

environmental concern may be identified once analysis and interpretation of the data collected in the ORNL Radiological Survey has been completed.

#### Comment

The Y-12 Long-Range Environmental Management Plan contains funding for evaluation and prioritization of CERCLA sites. As stated, additional sites have been identified since the issuance of the Phase I Installation Report. Of the sites mentioned above, the only sites not recognized by the Y-12 Plant prior to the survey are the sites north of Portal 18 and the disturbed area located in the 1950s photograph.

Specifics include:

South side of Building 9201-5 - Area was determined to be contaminated with Thorium by the Y-12 Radiological Survey. Site has been remediated by plant personnel.

Area north of Portal 18 and laundry site - Above background levels of radiation were observed at these sites. Since these areas are within the plant (outdoors where there are no regularly occurring operations, and the radiation levels were of low magnitude), the potential health hazards to plant personnel are low. These sites will be prioritized and incorporated into a broader remedial actions plan for the plant.

Rogers Quarry - Please note that any disposals of materials now considered to be hazardous would have occurred long before November 1980. Since that time, Rogers Quarry has not been used for the disposal of hazardous waste.

#### Finding

10. In the event of an accident, the potential exists for an uncontrolled, unmonitored atmospheric release of uranium through nonprocess room exhausts. These areas are not usually equipped with either emission controls or radiological samplers. Y-12 estimates that 23 percent of the total release of uranium from a December 27, 1985, chip fire in Building 9212 was through such an exhaust portal.

#### Comment

Although a potential exists for uncontrolled accidental releases as identified in the survey findings, several factors minimize the probability of a release which would result in a significant environmental impact. Enriched uranium is about 150 times more radioactive than depleted uranium. For this reason, a release of enriched uranium would be more likely to result in a significant radiological dose to the public. The chance of such a release is minimized by safety procedures, criticality control measures, and special equipment to contain enriched uranium. These mitigating factors are described in FSARs and OSARs for the facilities where

enriched uranium is processed and handled. Also, an evaluation of potential releases from both enriched and depleted uranium processing areas was made recently to determine the potential for contamination of nearby air intakes (Y/EN-1769 and Y/EN-1634). Accidental releases to the work areas have been monitored in the past using an extensive network of health physics samplers. This data has also been used to estimate the quantity of uranium released through room exhausts, as was done in the referenced December 27, 1985, fire incident. To date, none of these evaluations has indicated the need to modify the uranium processing area to achieve more containment or monitoring for room exhausts. Sample results from the 11 Y-12 Plant perimeter air monitors and ORNL perimeter air monitoring network have shown emissions at the plant boundary and offsite areas to be well below acceptable dose levels.

### Finding

11. Soils have been, and are being, contaminated by inadequate waste storage practices. Past practices of storing open drums at the Interim Drum Storage Yard adjacent to Buildings 9720-32 and 9720-33 (south of the Salvage Yard) have resulted in contamination of the soil with uranium and chromates. Leaking drums and spillage of drum contents during past transfer operations at the Oil and Solvent Drum Storage Area within the Salvage Yard (south of Building 9114) may have resulted in groundwater and surface water contamination. Additionally, due to the leaking drums and the crowded drum storage, this storage area does not fully comply with RCRA requirements. Per 40 CFR 265, Subpart I, all hazardous waste drums must be inspectable; and hazardous waste in leaking or deteriorated drums must be transferred to containers in good conditions or managed in some other way that complies with RCRA storage requirements. The yard contains approximately 1700 drums of oils and solvents, some of which are uranium contaminated. PCB contamination of soil/gravel also has been documented by Y-12 in the Line Yard west of Building 9720-8 and has probably occurred in the transformer storage yard east of Building 9204-1 and in the old PCB oil storage area in the Salvage Yard.

### Comment

The Interim Drum Yard is inspected weekly, and leaking drums are repackaged. These activities are documented in an inspection log. Also, drums are being removed from the yard for disposal or indoor storage as space permits. Within the next few months, partial closure of the southern portion of the Interim Drum Yard is scheduled to be conducted in accordance with a closure plan approved by the TDHE. The remaining portion of the drum yard is scheduled for closure in 1989. The yard has never had more than 1000 drums at one time, and it is standard practice to keep the drums closed except during transfer operations.

With respect to the Salvage Yard - Oil and Solvent Drum Storage Yard: The eastern diked portion of the Oil and Solvent Drum Storage Area is

still in operation. As a result of partial closure of this facility, a number of drums from the western (closed) area were moved into the eastern (active) portion creating temporary crowded conditions. However, of the 20 to 30 rows of drums within the active portion, only two rows have insufficient aisle space for adequate inspections. The Waste Transportation, Storage, and Disposal Department is working towards reducing the number of drums in this area through utilization of the increased bulk liquid storage capacity, commercial disposal, and indoor storage at the Oak Ridge Gaseous Diffusion Plant to make sufficient aisle space for inspections. Improved handling capabilities are also expected once the TSCA incinerator becomes operational. It should be noted that soil sampling and analysis in the Salvage Yard PCB area showed PCB contamination to be well below levels of concern.

#### Finding

12. Deteriorating drums at the United Nuclear Company (UNC) Disposal Site on Chestnut Ridge will ultimately release wastes to the soil which could eventually migrate to the groundwater and increase nitrate concentrations in the immediate vicinity above the drinking water standards. There are approximately 29,000 drums disposed at the site containing approximately 300 tons of nitrates.

#### Comment

There are approximately 29,000 drums of waste stored at the UNC site on Chestnut Ridge containing approximately 53 metric tons of nitrate as nitrogen. A detailed sampling program and pathways analysis has been completed which indicates that the wastes can be closed in place using available capping technology without exceeding drinking water standards for nitrates in the groundwater. Regulatory approval is being sought for the capping option. The UNC site is managed under the RCRA 3004(u) program.

#### Finding

13. Reliable and defensible estimates of radionuclide emissions cannot be made because the current stacks preclude the proper location of samplers in accordance with recognized guidelines. A stack radiological monitoring project is underway to combine and modify stacks to permit proper sampler location and to provide for accurate continuous sampling for radionuclides and periodic stack flow-rate measurement. Real-time monitors will also be provided for certain stacks to indicate control device failure.

#### Comment

Since the time of the survey, a major project to upgrade the radiological monitoring capabilities of plant process exhausts from uranium handling areas has been completed. Eighty-five process exhaust stacks have been upgraded to meet EPA stack sampling criteria for particulate sampling (40 CFR Part 60, Appendix A, Method 1). New continuous stack

sampling and monitoring equipment has been installed on the modified exhaust stacks and has been operational since February 27, 1987. Reliable continuous data on the Y-12 Plant radionuclide emissions from these stacks is now being collected.

#### Finding

14. Uranium processing operations at Y-12 have released significant amounts (@ 14,000 Kg to 22,000 Kg per year during the period 1981 to 1985) of hydrogen fluoride to the atmosphere impacting on the ambient air quality of the surrounding area. A hydrogen fluoride scrubber has been installed at Building 9206 and is scheduled for start-up early this year. Additional scrubbers are under construction at Building 9212.

#### Comment

Although the start-up of the Building 9206 scrubber has been postponed due to safety considerations, it has not been shown that releases of HF from the Y-12 Plant have had an adverse impact on ambient air quality of the surrounding area. Results of ambient air sampling for fluoride conducted within and around the Y-12 Plant by the Environmental Monitoring Group have consistently shown that ambient HF levels are well within the EPA ambient air quality standards. The Building 9212 scrubber has been installed, and both scrubbers are expected to be operational by late fall 1987.

#### Finding

15. The holding capacity of New Hope Pond has been reduced by the accumulation of large volumes of sediment over time and now may not provide sufficient containment for a large spill of hazardous material. The shorter retention time may also decrease its effectiveness as a sedimentation basin, resulting in release of heavy metals, such as mercury, into East Fork Poplar Creek. Y-12 has proposed dredging of New Hope Pond but is presently awaiting resolution of regulatory differences of opinion between the state of Tennessee and EPA Region IV regarding disposition of the dredged material.

#### Comment

A meeting was held with the state and the EPA on April 9, 1987, to discuss alternatives for New Hope Pond. Samples taken by the Y-12 Plant show that the sediment passes the EP Toxicity test. The EPA and the TDHE are reviewing the information presented, and indications are that a joint decision will be made concerning the disposition of the sludge and future status of New Hope Pond.

#### Finding

16. The use of fuel-oil ignition on Boilers 3 and 4 will continue to require baghouse bypass resulting in opacity and mass emission limitation exceedances, which can cause or contribute to exceedances of

the 24-hour primary health based total suspended particulate standard. These boilers are scheduled for conversion to natural gas ignition during the summer of 1988.

Comment

Boilers 1 and 2 were converted to natural gas ignition (No. 2 started on natural gas on November 12, 1986, and No. 1 started on natural gas on January 19, 1987). Excess opacity due to hot standby firings have been reduced to below the 1 percent operating time deminimus level since the outage for conversion began in October 1986. In April 1987, excess opacity emissions occurred for only 6 minutes in the entire month. Hot standby firings on the two oil ignition boilers are kept as low as possible by using them as the base load boilers and operating the two gas ignition boilers for standby and load swing conditions. The remaining two boilers will be converted to natural gas ignition during the summer of 1988.

Finding

17. Suspended solids are entering McCoy Branch from the filled and overflowing fly ash impoundment, potentially affecting aquatic life in this state designated "blue line" stream. Groundwater also may be contaminated by infiltration/percolation of leachate from the fly ash impoundment, McCoy Branch, and/or Rogers Quarry.

Comment

The Y-12 Plant has contracted an architect-engineer to conduct a feasibility study to investigate alternatives to provide for the treatment or elimination of this discharge. The recommended alternative is expected by July 31, 1987. In addition, a proposed Steam Plant Ash Disposal Facility Project has been submitted as an FY 1990 Line Item project.

Wells were installed around Rogers Quarry in 1985. Preliminary data suggest that groundwater in the vicinity of Rogers Quarry exhibits elevated concentrations of some constituents which are characteristic of ash disposal. Studies are underway to determine whether there is a net flow into or out of the quarry.

Rogers Quarry and the filled ash impoundment are solid waste management units, and the potential release of contaminants to groundwater and surface waters will be investigated as part of the RCRA 3004(u) program. Any requirements for remedial action will be conducted as a result of those investigations. Additional wells will be installed as part of the DOE Environmental Survey sampling program.

Finding

18. Volatile organic compounds are being emitted to the atmosphere through standpipes and vents at the Bear Creek Valley Waste Disposal Area. A sampling and characterization program is being conducted by ORNL.

Comment

Volatile organic compounds have been detected in air in the standpipes which were used to vent underground trenches. However, preliminary results have not detected the compounds in the ambient air in the Bear Creek Valley Waste Disposal Area. Surveys have been conducted by the Y-12 Industrial Hygiene group in the area of the standpipes and vents, as well as other areas of known organic contamination, and have not found levels which are of concern for human health.

Finding

19. Uncontrolled, unquantified emissions of coal dust to the atmosphere can occur when coal is dropped from the conveyer into open top hoppers at the steam plant. This situation could potentially contribute to exceedances of the 24-hour total suspended particulate air quality standard. Y-12 has plans to close the hoppers to minimize dust emission.

Comment

Plans are part of the 1991 Line Item Project, Steam Plant Service Life Extension. The project will provide covers for the hoppers and a filtered room exhaust.

Finding

20. Gasoline vapors vented from the underground storage tank at the Y-12 gas station contribute to the ozone nonattainment problem in Anderson County. An equivalent volume of vapor is emitted each time the tank is filled. During 1986, 435,000 gallons of gasoline were purchased.

Comment

The TDHE rules for gasoline storage tanks at service stations require vapor vent controls except under certain conditions spelled out in paragraph 1200-3-18-.10(3). Exemption (c) in this list of exemptions states that the rule does not apply in rural counties. Since Anderson County is considered rural per paragraph 1200-3-18-.02(a) and (b) of the TDHE rules, these controls are not required. Also, per recent verbal communication with TDHE, Anderson County is attainment for ozone (VOCs). The 40 CFR 81 Subpart C-Section 107 Attainment Status Designations referred to in the survey are out of date and incorrect.



Finding

21. The incinerator and shredder at Building 9811 both emit particulate matter to the atmosphere, adding to the ambient air total suspended particulate load. The two-chamber incinerator is not equipped with emission controls, and visible emissions have been observed.

Comment

The incinerator is designed for the burning of documents. Work is in the planning stage to upgrade emission controls for the shredder located at Building 9811. The exhaust system modifications will include the installation of a new cyclone and bag filter. The project is presently unfunded. Emissions from the incinerator will be controlled in the future by limiting the material burned in the incinerator.

## CATEGORY IV

Finding

22. Machine and product cleaning wipes may need to be considered and handled as a mixed waste. The wipes contain listed solvents and are disposed of at the Bear Creek Valley Waste Disposal Area as low-level waste. Plant personnel have indicated that EPA Region IV and the state are aware of this practice and have approved it because the wipes do not produce "free standing liquids." However, RCRA does not regulate listed wastes in terms of free standing liquids or quantities; RCRA regulates wastes merely in terms of presence. Furthermore, EPA has proposed to go beyond regulation of free standing liquids and will regulate all free liquids (i.e., liquids that could be released during a filter test or a compression test). As a point of reference, similar wipes used at another DOE facility, the Rocky Flats Plant in Colorado, have been labeled as a mixed waste by the regional EPA and state and are no longer allowed to be disposed of onsite in their nonhazardous landfill.

Comment

The Y-12 Plant has previously obtained approval from the TDHE and EPA Region IV to dispose of uranium-contaminated gloves without free standing liquid in the Bear Creek Valley. This approval was extended to uranium-contaminated wipes. In light of this finding, this situation has again been brought to the attention of the TDHE who endorsed the approval previously granted.

Rocky Flats procedures are not a proper point of reference since the Y-12 Plant is subject to state of Tennessee regulation, not state of Colorado regulations. State of Colorado hazardous waste regulations are more stringent than EPA hazardous waste regulations. (For additional input, refer to the comment for Finding #2.)

Finding

23. The incinerator at Building 9731 has been used in trial runs to burn solids, liquids (some chlorinated), and animal carcasses; however, the permit application indicates that only "liquid waste solvents" will be incinerated.

Comment

It should be noted that this incinerator is not presently in use. While it is true that, during a trial burn (less than 16 hours), animal carcasses were used to obtain design data for an incinerator for the Biology Division and that a test burn (less than 40 hours) was conducted using organics, including dibutyl carbitol, tributyl phosphate, and trioctyl phosphine oxide, the incinerator has not been used for chlorinated solvents as stated.

Finding

24. Hazardous waste storage practices in some areas of Buildings 9720-31 and 9720-9 do not meet current standards. Inadequate aisle space does not allow for the inspection of waste identification labels on drums or container integrity. The lack of impervious secondary containment at Building 9720-9 also constitutes an inadequate hazardous waste storage practice (i.e., the present means of providing secondary containment for PCBs stored in this building entails the use of wooden structures that are not sealed to the floor).

Comment

In Building 9720-31, recent shipments of waste have lessened crowding of drums. In Building 9720-9, an upgrade of the entire facility is in the design stage. The modifications include installation of permanent, concrete diking. Recent shipments of waste have lessened the crowded condition of drums in Building 9720-9 as well.

Finding

25. Data obtained in ambient air sampling for total suspended particulates may not be accurate and defensible because of siting and quality assurance deficiencies. Relocation of the west monitor is currently underway. Additionally, the filter media being used on the high volume sampler for Total Suspended Particulates (TSP) does not meet reference method requirements (40 CFR 50, Appendix B) for filter efficiency.

Comment

The West TSP monitor has been relocated based on review of meteorological data. The filter media presently being used is the Watman 41 filter. Glass filters are recommended in 40 CFR 50, Appendix B; however, glass filters tried in the past did not maintain structural

integrity (i.e., they splintered, resulting in loss of sample in some cases). There may be a new glass filter introduced to the market which we plan to try. A third TSP monitor will be added for quality assurance purposes next fiscal year.

Finding

26. Two small (15 gallon) degreasers in Building 9201-1 are not covered under a current air permit.

Comment

The degreasers in question are small mobile cold solvent cleaning units which are not connected to an exhaust fan or duct system. The Tennessee Air Pollution Control Permits for the Building 9201-1 fabrication shops are due to expire on January 1, 1988. A resubmittal of the application is due to the TDHE by November 1, 1987, and will include any modifications to the facility. At this time, these permit application renewals are being prepared and will be reviewed for accuracy and completeness. The degreasers are being added to the application.

Finding

27. The required number of bacteriological samples are not being run on the Y-12 water distribution system, and the analysis records are not being retained for the required length of time.

Comment

This situation has been corrected. The required number of bacteriological samples are being run and records will be maintained for a period of at least five years.

Finding

28. Cooling water discharges to EFPC exceed the NPDES upper pH limit of 8.5 due to the natural alkalinity in the makeup water and the corrosion inhibitor being used. Tests on reformulating the corrosion inhibitor to meet the required pH and at the same time meet toxicity criteria have been undertaken and, to date, appear to be successful.

Comment

The Y-12 cooling towers operate at pH values of 8.5 to 9.0 standard units primarily because evaporation tends to concentrate alkaline components of the make-up water. Additionally, carbon dioxide which is acidic when dissolved in water is removed during recycle.

Operational testing and evaluation of a new corrosion inhibitor formulated to help control the pH of cooling towers are underway. Preliminary results of its effectiveness appear promising although a

few parameters are marginal. It should be noted that data demonstrates that instream water quality standards are not being violated as a result of slightly elevated pH discharges from Y-12 cooling towers. Toxicity results using both fathead minnows and Ceriodaphnia demonstrate that cooling tower blowdown does not adversely affect instream aquatic biota.

### Finding

29. While the state has permitted the disposal of asbestos materials at the sanitary landfill, uranium-contaminated asbestos materials are being disposed of at the Bear Creek Valley Waste Disposal Area without state notification or approval.

### Comment

Even though state permits and approvals are not required for disposals in Bear Creek Burial Ground, the operation of the facility is patterned after operating requirements from the State Solid Waste Management regulations to ensure proper disposal. Contaminated asbestos is disposed in special waste cells under conditions which meet TDHE requirements.

In June 1984, approval was given by the State Solid Waste Management Division for disposal of asbestos waste at the Y-12 Centralized Sanitary Landfill. One of the requirements of the approval was that copies of disposal logs for the asbestos waste be submitted to the TDHE. Since that time, copies of disposal logs for asbestos disposals in the Bear Creek Burial Grounds as well as the Sanitary Landfill have been submitted to the DOE monthly for transmittal to the TDHE.

### Finding

30. The trash radiation monitor operation does not have sufficient quality assurance controls to verify that the analyses used to determine if the trash is contaminated or not are reliable.

### Comment

Prior to start-up in 1986, the Trash Monitor Station was calibrated on trash-filled, 12-cubic-yard dumpsters that are in common use throughout the plant. The statistically designed calibration study consisted of placing known masses of depleted uranium chips at various positions within an empty dumpster and a trash-filled dumpster. The results of the study indicate that the monitoring instrumentation can monitor quantities of depleted uranium as low as 200 grams in a trash-filled, 12-cubic-yard dumpster.

The issue addressed during the Environmental Survey was the lack of quality controls needed to assure that instrumentation was not degrading over time. In response to this concern, quality control charts were developed and are used on a weekly basis to ensure the

reliability of the detector crystals, photomultiplier tubes, and associated electronics at the trash monitoring station.

#### Finding

31. An open drain valve was discovered on a spill containment structure for a PCB transformer located outside on the south side of Building 9201-5N. Leaving drain valves open on such structures defeats the purpose of providing secondary containment.

#### Comment

The drain valve for this transformer dike has been closed. It is standard practice to keep such valves closed. In the future, drain valves will be checked during the quarterly inspections for PCB transformers to ensure they are kept in the closed position.

#### Finding

32. Three discarded 55-gallon drums were observed at the fly ash impoundment. Drum contents are unknown. These may be remnants of a formerly used floatation device or evidence of improperly disposed of materials in an area having a direct pathway to the McCoy Branch, a nearby stream.

#### Comment

Upon return to this area, four additional drums were found. All seven of the drums were empty and have been removed and disposed of properly. The drums are believed to be those used as flotation devices for a catwalk which extended from the side of the impoundment to the overflow pipe.

#### Finding

33. Not all groundwater monitoring wells are secured against tampering. A potential exists for vandals to damage the unlocked wells and possibly contaminate the groundwater. A number of wells with cracked slabs and insufficient protection with bumper posts also exist.

#### Comment

Several hundred groundwater monitoring wells are in place in the Y-12 area. The wells are under a maintenance program which identifies, repairs, and replaces damaged slabs, caps, and locks. The wells are exposed to the weather, and the slabs are subjected to freeze-thaw conditions and to occasionally crack. Locks and hasps on wells also break through use and are replaced; wells currently used for monitoring are locked.

Protective bumper posts are in place around wells in traffic areas. Isolated wells which are accessed only for sampling may not require bumper posts for damage protection.

#### Finding

34. The Environmental Laboratory Quality Assurance (QA) program does not entirely meet commonly accepted QA program requirements. In particular, a formal analyst qualification program has not been implemented; there is no current QA program for asbestos analyses; work station logbooks are not used in the environmental radiochemistry laboratory (Building 9720-6); the environmental radiochemistry laboratory also lacks formal written procedures for conducting quality control checks of the radiation counting equipment; and a number of buffers in use have exceeded expiration dates.

#### Comment

An existing procedure outlining the qualification of analysts is now being rewritten. It is scheduled to be issued by October 1, 1987.

The laboratory is now participating in the NIOSH PAT program which includes asbestos counting. In addition, an exchange program is being set up among ORO laboratories for the analysis of samples for asbestos. A program has begun for comparison of results between analysts within the Y-12 Laboratory as well.

Where appropriate, logbooks will be used to record quality data such as spike recovery and duplicate samples. Implementation will begin by August 28, 1987.

A program began to provide a monthly review of chemicals having expiration dates in the laboratories. This was done by the laboratory supervisor or his/her representative. Implementation began June 12, 1987.

## DOCUMENT DESCRIPTION (Completed By Requesting Division)

Document No.	Author's Telephone No.	Acct. No.	Date of Request
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Unclassified Title: DOE Headquarters Environmental Survey: Comments on Findings			
Author(s) (Suzanne Sandberg)			
TYPE: <input type="checkbox"/> Formal Report <input checked="" type="checkbox"/> Informal Report <input type="checkbox"/> Progress/Status Report <input type="checkbox"/> Co-Op Report <input type="checkbox"/> Thesis/Term Paper			
<input type="checkbox"/> Oral Presentation (Identify meeting, sponsor, location, date):			

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Document has patent or invention significance	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes (Identify)
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## DIVISION REVIEW AND APPROVAL (Completed By Requesting Division)

## TECHNICAL CLASSIFICATION REVIEW (Divisional Classification Representative)

Title(s): Unclassified	Abstract: NA
DOCUMENT: Level Unclassified	Category NA
Sara L. Welch	1/29/93
Signature	Date

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Title of requested document DOE - Headquarters Environmental Survey

Document Number 30053 300503

Access Number of Document \_\_\_\_\_ Date of Document July 24, 1987

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Document number UNNUMBERED/300503 Pages 22

Document title DEPARTMENT OF ENERGY (DOE) - HEADQUARTERS ENVIRONMENTAL SURVEY: COMMENTS ON FINDINGS

Author(s) (indicate other divisions or organizations, if applicable) GG FEE

Document type (See Doc. Prep. Guide, Chs. 1 and 2, for definitions of document types):

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